**18CS/IT 305**

**Hall Ticket Number:**

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| **II/IV B.Tech (Regular / Supplementary) DEGREE EXAMINATION** | | | |
| **February, 2021** | **Common to CSE & IT** | | |
| **Third Semester** | **Operating Systems** | | |
| **Time:** Three Hours | | **Maximum: 5**0 Marks | |
| *Answer ALL Questions from PART-A.* | | | (1X10 = 10 Marks) |
| *Answer* ***ANY FOUR*** *questions from PART-B.* | | | (4X10=40 Marks) |

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|  | **Part-A** | |  | |
| 1. | Answer all questions | | (1X10=10Marks) | |
|  | a) | Define Operating system. | |  |
|  | b) | What is context switch? | |  |
|  | c) | Draw process state diagram. | |  |
|  | d) | What are the advantages of multi-threading? | |  |
|  | e) | Define critical section. | |  |
|  | f) | What is dead lock? | |  |
|  | g) | Define Page fault. | |  |
|  | h) | What is the use of virtual memory? | |  |
|  | i) | List out file types. | |  |
|  | j) | Define volume in connection with disk. | |  |
| **Part-B** | | | | |
| 2. | a) | Explain about OS services in detail. | | 5M |
|  | b) | Discuss about memory hierarchy with diagram. | | 5M |
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| 3. | a) | Explain about IPC techniques i)Shared memory ii)Message Passing | | 5M |
|  | b) | Explain about Multi-threading models. | | 5M |
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| 4. | a) | Consider the following table of arrival time and burst time for three processes P0, P1 and P2.  **Process Arrival time Burst Time**  P0 0 ms 9 ms  P1 1 ms 4 ms  P2 2 ms 9 ms  The pre-emptive SJF scheduling algorithm is used. What is the average waiting time for the three processes? | | 5M |
|  | b) | Write short note on i)Race condition ii)Synchronization iii)Semaphore | | 5M |
|  | | | | |
| 5. | a) | Explain round robin scheduling algorithm. | | 5M |
|  | b) | Write short note on i) Schedular ii)Ready Queue iii) Turnaround time. | | 5M |
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| 6. |  | Considering a system with five processes P0 through P4 and three resources of type A, B, C. Resource type A has 10 instances, B has 5 instances and type C has 7 instances. Suppose at time t0 following snapshot of the system has been taken:    **i**)What will be the content of the Need matrix?  ii)[Is the system in a safe state? If Yes, then what is the safe sequence?](https://media.geeksforgeeks.org/wp-content/cdn-uploads/gq/2016/01/safety.png)  iii)[What will happen if process P1 requests one additional instance of resource type A and two instances of resource type C?](https://media.geeksforgeeks.org/wp-content/cdn-uploads/gq/2016/01/safety.png) | | 10M |
| **P.T.O.**  **18CS/IT 305** | | | | |
| 7. | a) | Briefly explain necessary conditions for deadlocks. | | 5M |
|  | b) | Explain Resource allocation graph and wait for graph. | | 5M |
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| 8. | a) | Explain File accessing methods | | 5M |
|  | b) | Explain about file structures. | | 5M |
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| 9. | a) | Explain about various file operations in detail. | | 5M |
|  | b) | Explain about various file attributes in detail. | | 5M |

